OIPE JC176
JUL 2 0 2001
PATENT & TRADEMARK OFFICE

0300

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§	ATTORNEY DOCKET NO.
	§	**JP920000113US1**
SHUJI YAMADA	§	
	§	
Serial No. **09/838,994**	§	Examiner: **UNKNOWN**
	§	
Filed: **April 20, 2001**	§	
	§	Group Art Unit: **2182**
For: **SYSTEM AND METHOD OF IMPLEMENTING A BUFFER MEMORY AND HARD DISK DRIVE WRITE CONTROLLER**	§	

LETTER TO THE OFFICIAL DRAFTSMAN

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Submitted herewith are sixteen (16) sheets of formal drawings for the above-identified application.

CERTIFICATE OF MAILING
37 C.F.R. § 1.8(A)
I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to Assistant Commissioner of Patents and Trademarks, Washington, D. C. 20231.

7/16/01
Date

Signature

Respectfully submitted,

Andrew J. Dillon
Registration No. 29,634
BRACEWELL & PATTERSON, L.L.P.
Suite 350, Lakewood on the Park
7600B North Capital of Texas Highway
Austin, Texas 78731-1168
(512) 542-2100

ATTORNEY FOR APPLICANT

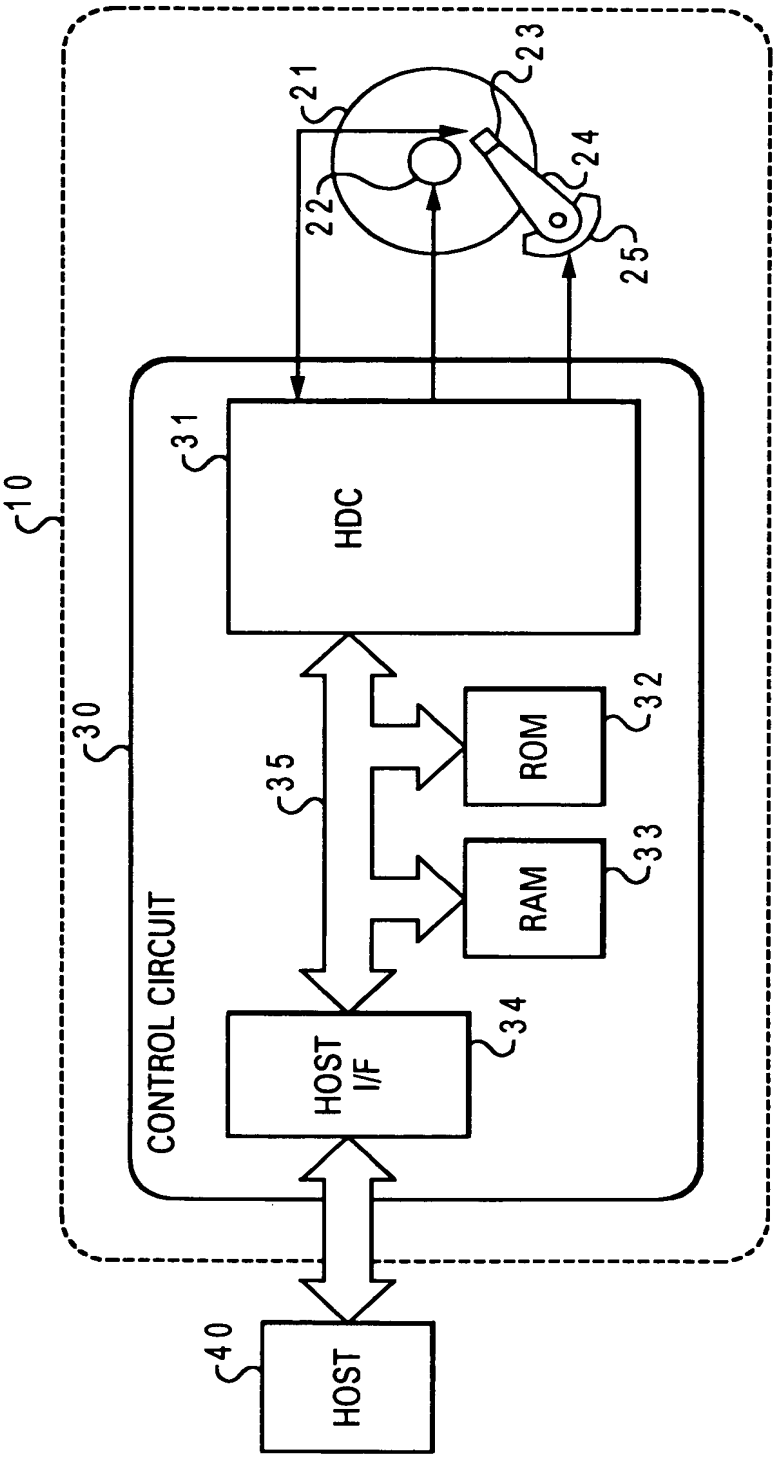
10
21
23
22
24
25
31
HDC
30
CONTROL CIRCUIT
35
ROM
32
RAM
33
HOST I/F
34
40
HOST

Fig. 1

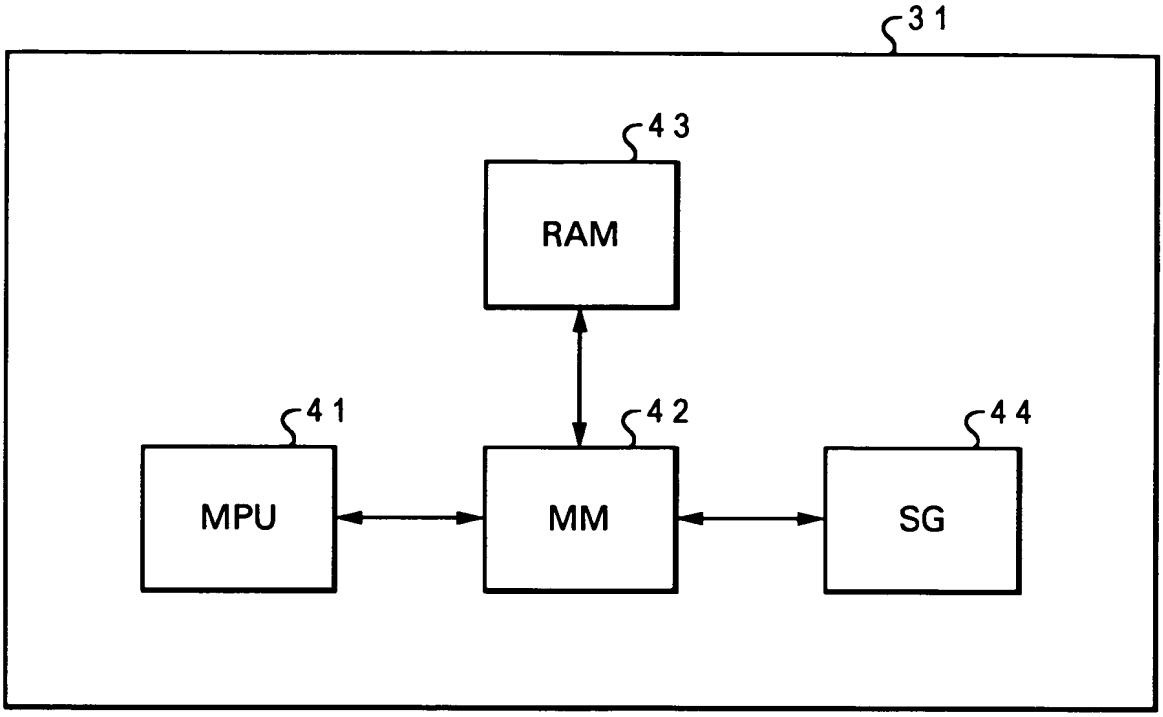
31
43
RAM
41
42
44
MPU
MM
SG

Fig. 2

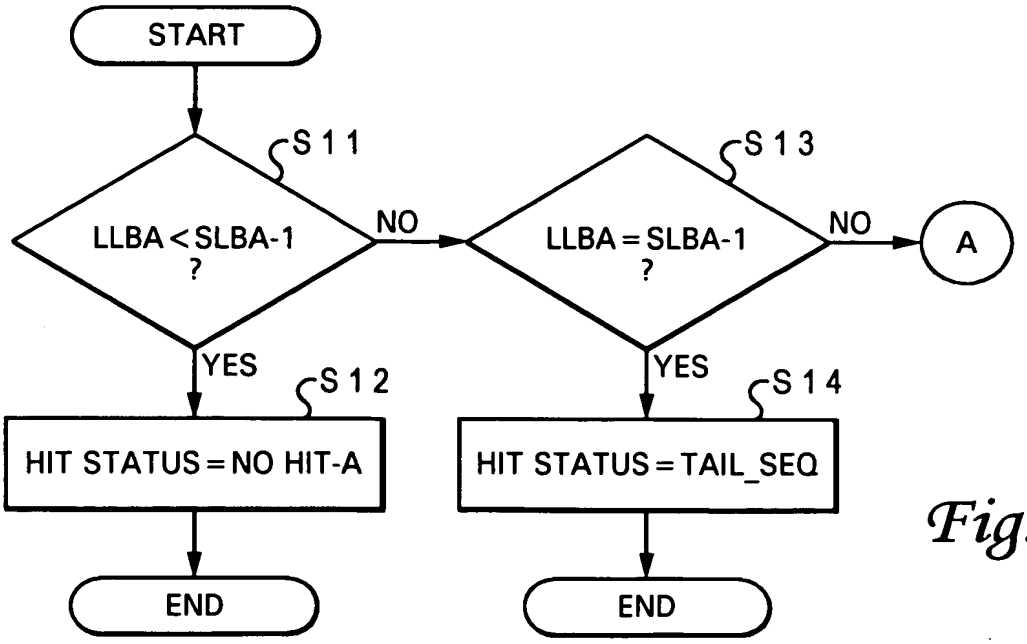
START
S11
LLBA < SLBA-1 ?
NO
S13
LLBA = SLBA-1 ?
NO
A
YES
S12
HIT STATUS = NO HIT-A
END
YES
S14
HIT STATUS = TAIL_SEQ
END

Fig. 4

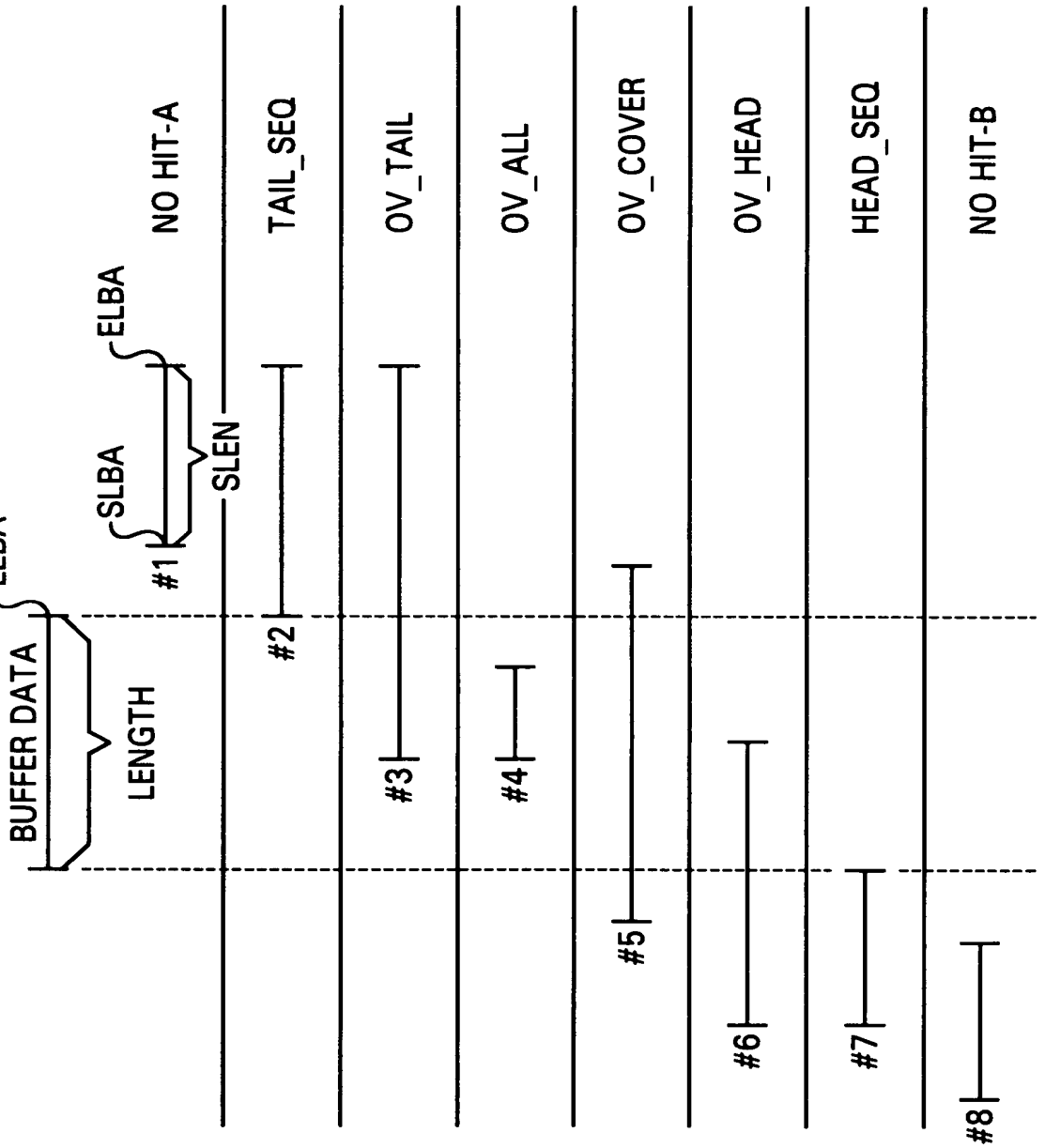
BUFFER DATA
LENGTH
LLBA
SLBA
ELBA
SLEN
#1
NO HIT-A
#2
TAIL_SEQ
#3
OV_TAIL
#4
OV_ALL
#5
OV_COVER
#6
OV_HEAD
#7
HEAD_SEQ
#8
NO HIT-B

Fig. 3

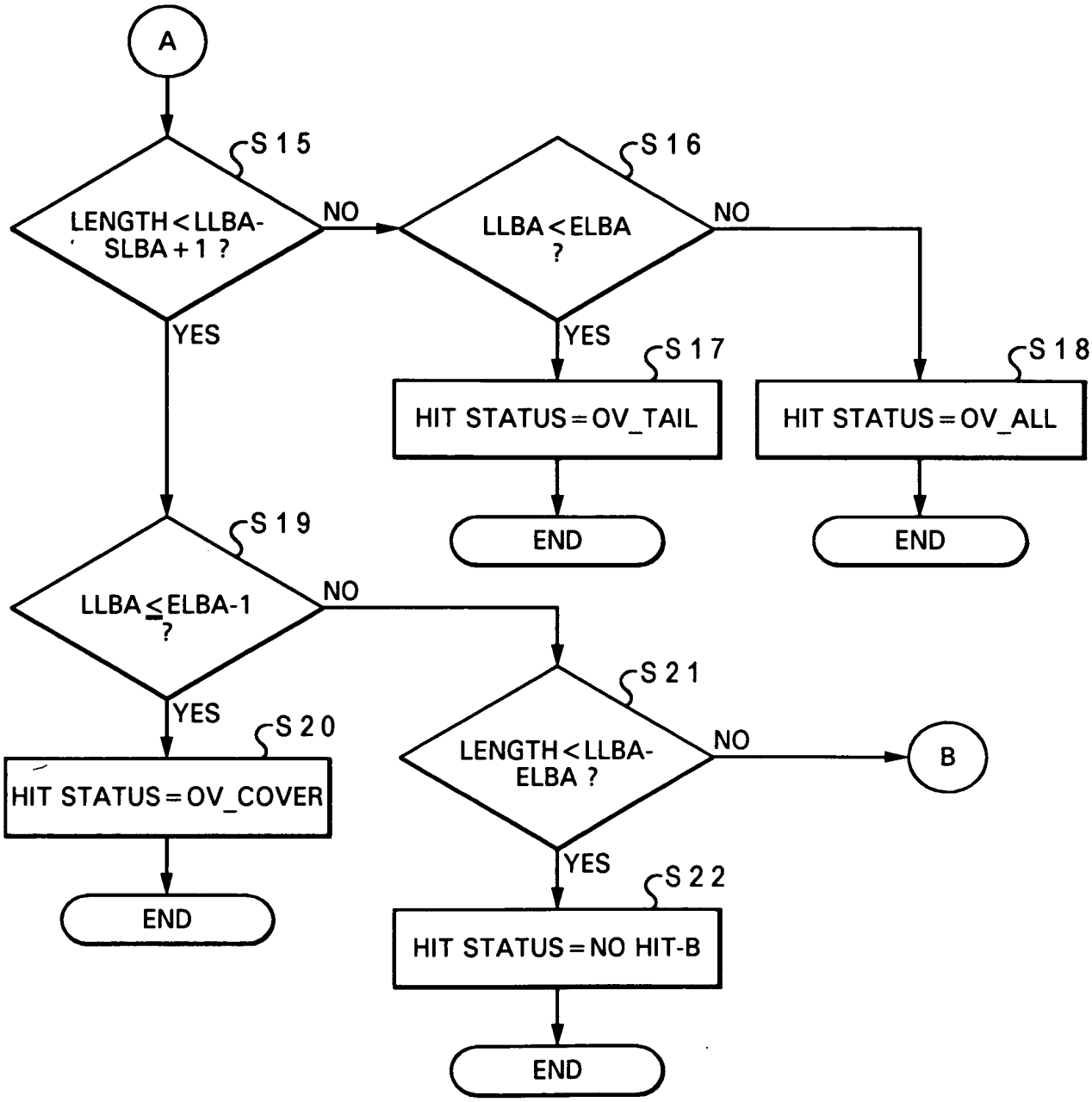
A
S 15
LENGTH < LLBA-SLBA + 1 ?
NO
YES
S 16
LLBA < ELBA ?
NO
YES
S 17
HIT STATUS = OV_TAIL
END
S 18
HIT STATUS = OV_ALL
END
S 19
LLBA ≤ ELBA-1 ?
NO
YES
S 20
HIT STATUS = OV_COVER
END
S 21
LENGTH < LLBA-ELBA ?
NO
B
YES
S 22
HIT STATUS = NO HIT-B
END

Fig. 5

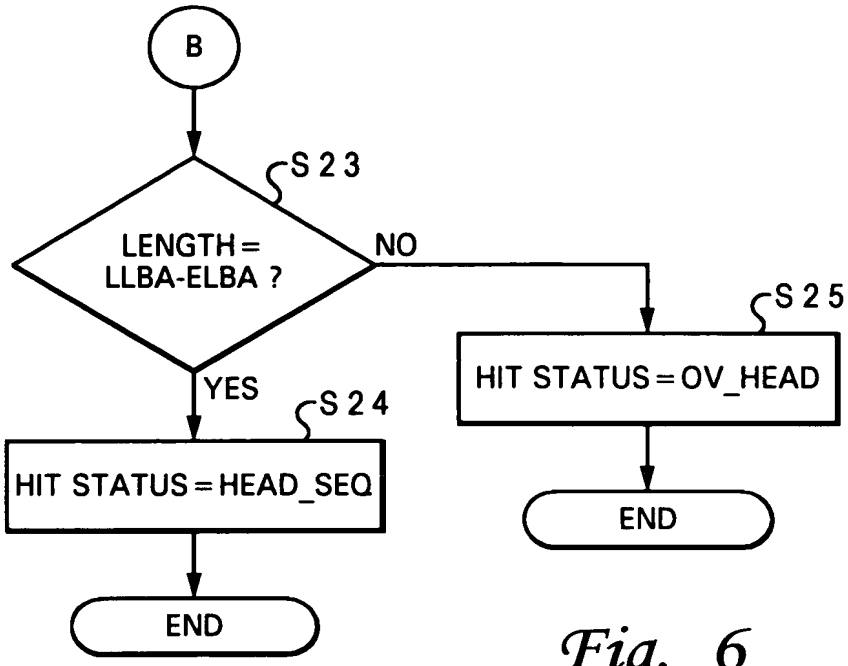
B
S 2 3
LENGTH = LLBA-ELBA ?
NO
YES
S 2 4
HIT STATUS = HEAD_SEQ
END
S 2 5
HIT STATUS = OV_HEAD
END

Fig. 6

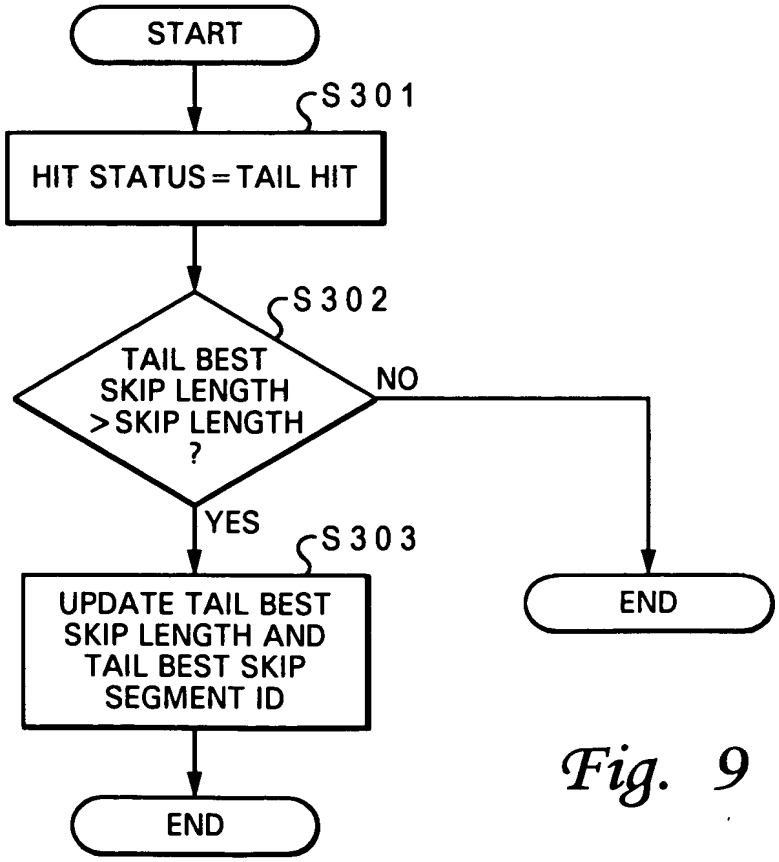
START
S 3 0 1
HIT STATUS = TAIL HIT
S 3 0 2
TAIL BEST SKIP LENGTH > SKIP LENGTH ?
NO
YES
S 3 0 3
UPDATE TAIL BEST SKIP LENGTH AND TAIL BEST SKIP SEGMENT ID
END
END

Fig. 9

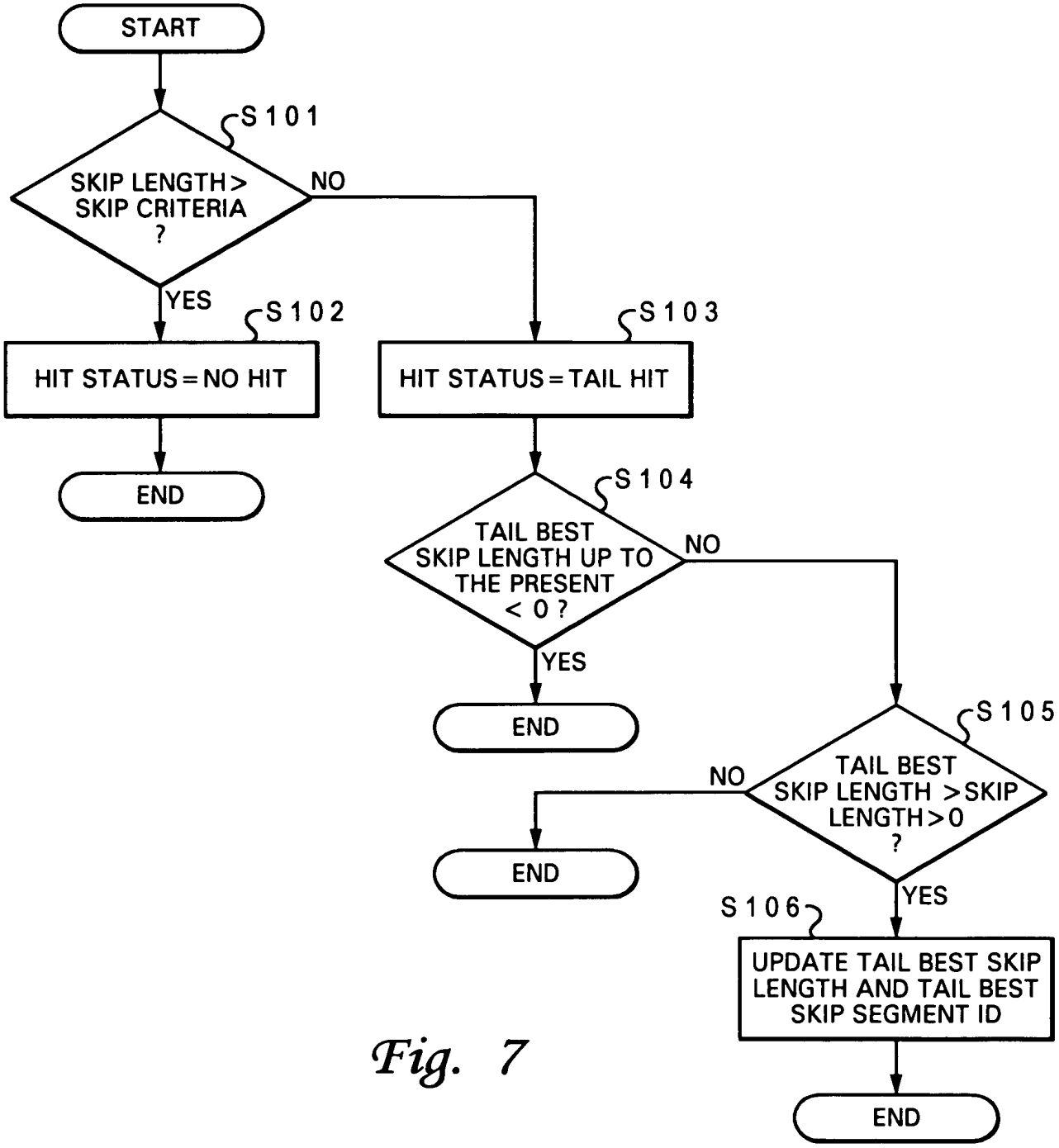
START
S101
SKIP LENGTH > SKIP CRITERIA ?
NO
YES
S102
HIT STATUS = NO HIT
END
S103
HIT STATUS = TAIL HIT
S104
TAIL BEST SKIP LENGTH UP TO THE PRESENT < 0 ?
NO
YES
END
S105
TAIL BEST SKIP LENGTH > SKIP LENGTH > 0 ?
NO
END
YES
S106
UPDATE TAIL BEST SKIP LENGTH AND TAIL BEST SKIP SEGMENT ID
END

Fig. 7

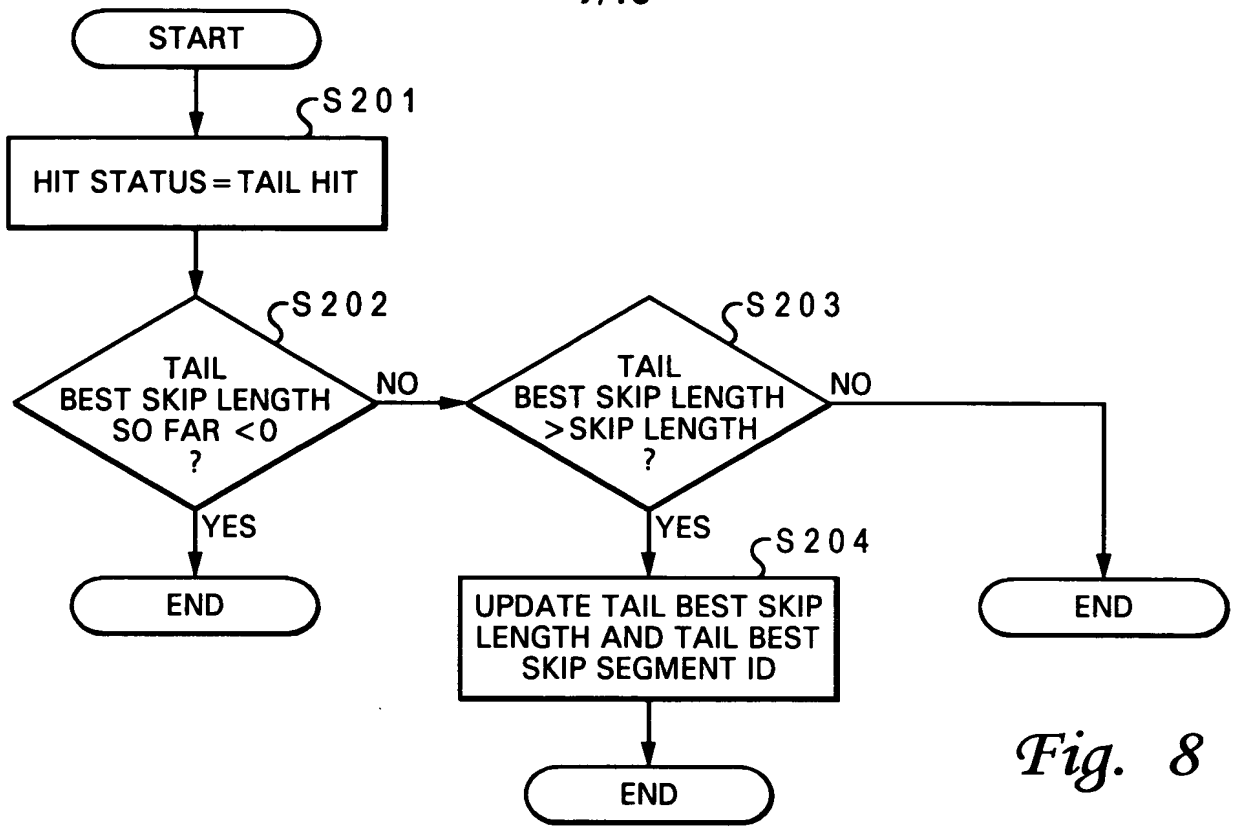
START
S201
HIT STATUS = TAIL HIT
S202
TAIL BEST SKIP LENGTH SO FAR <0 ?
NO
S203
TAIL BEST SKIP LENGTH >SKIP LENGTH ?
NO
YES
YES
S204
END
UPDATE TAIL BEST SKIP LENGTH AND TAIL BEST SKIP SEGMENT ID
END
END

Fig. 8

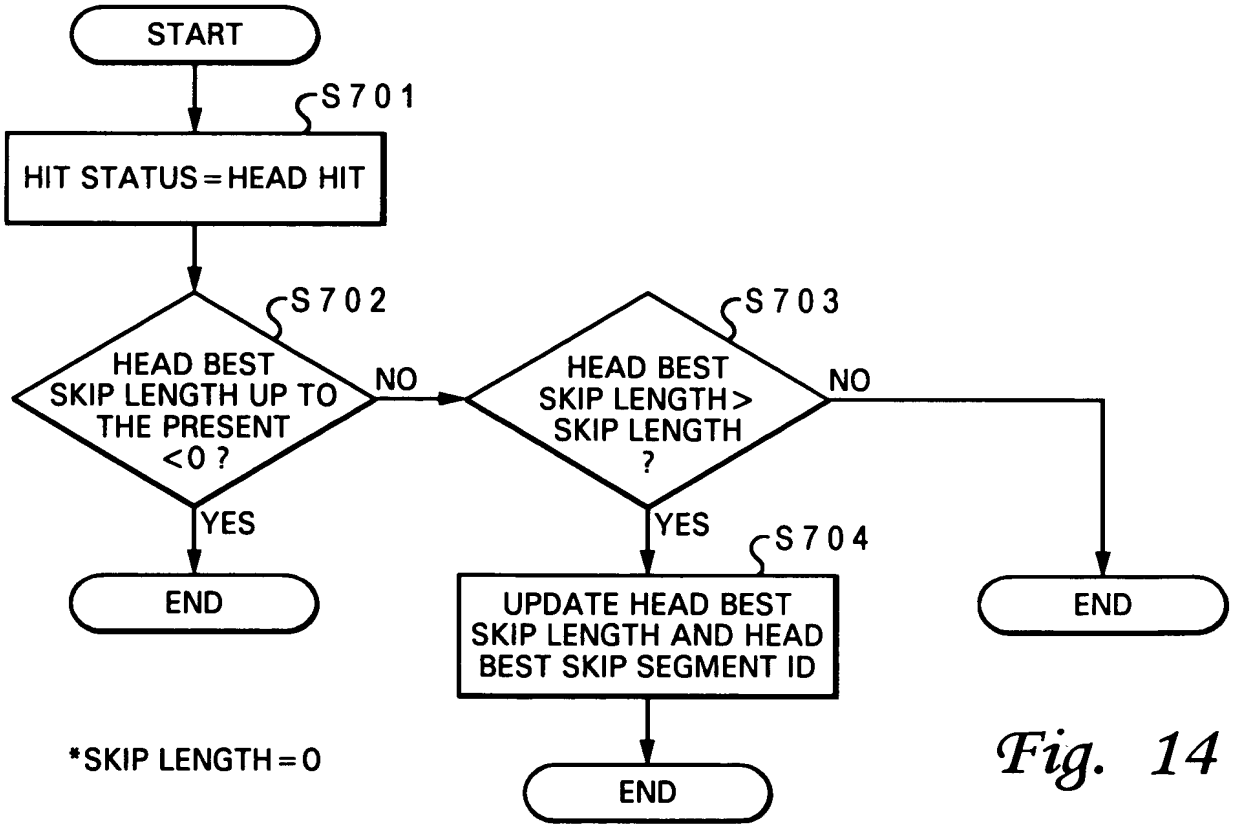
START
S701
HIT STATUS = HEAD HIT
S702
HEAD BEST SKIP LENGTH UP TO THE PRESENT <0 ?
NO
S703
HEAD BEST SKIP LENGTH> SKIP LENGTH ?
NO
YES
YES
S704
END
UPDATE HEAD BEST SKIP LENGTH AND HEAD BEST SKIP SEGMENT ID
END
END
*SKIP LENGTH = 0

Fig. 14

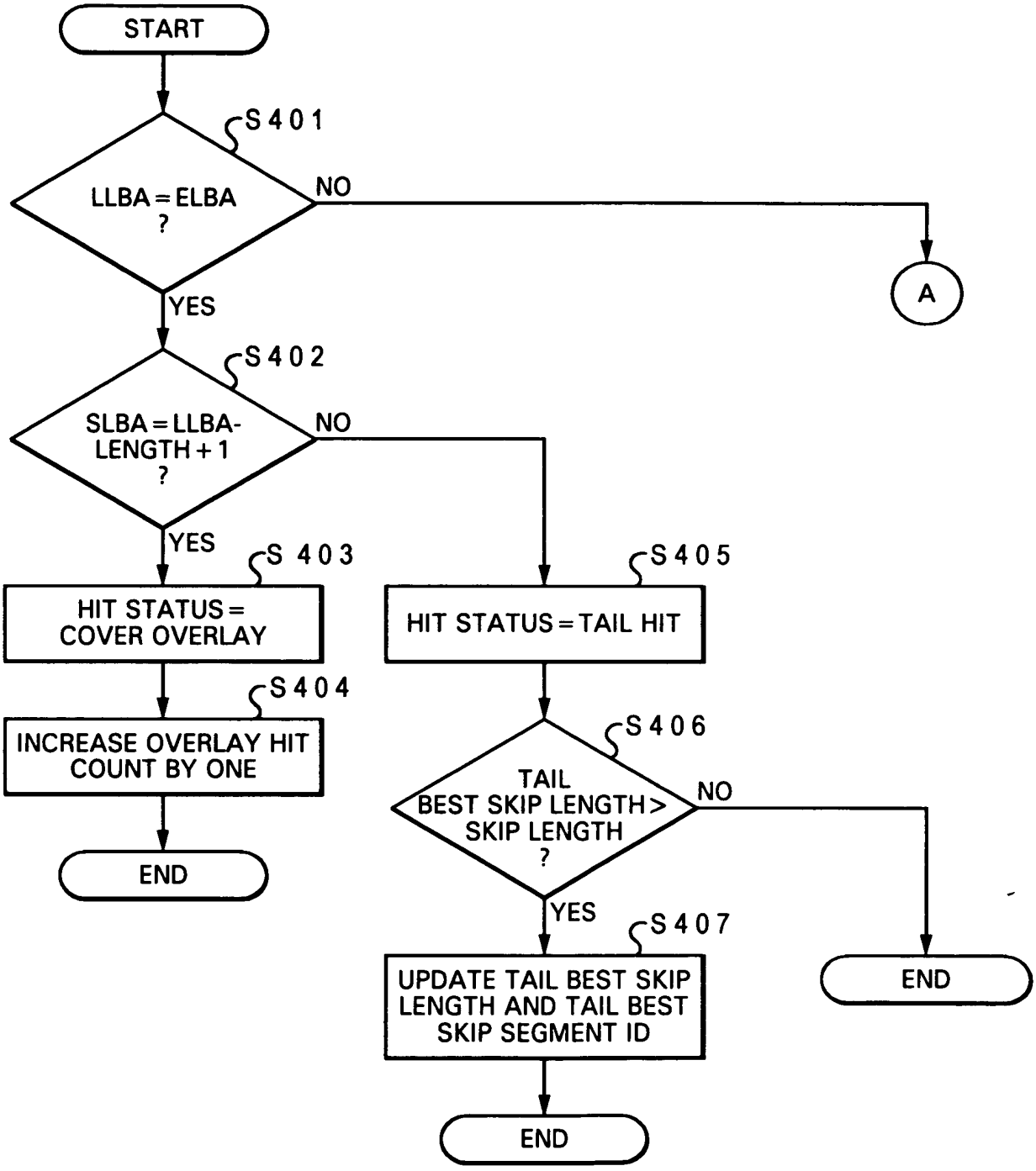
START
S401
LLBA = ELBA ?
NO
A
YES
S402
SLBA = LLBA-LENGTH + 1 ?
NO
YES
S403
HIT STATUS = COVER OVERLAY
S404
INCREASE OVERLAY HIT COUNT BY ONE
END
S405
HIT STATUS = TAIL HIT
S406
TAIL BEST SKIP LENGTH > SKIP LENGTH ?
NO
YES
S407
UPDATE TAIL BEST SKIP LENGTH AND TAIL BEST SKIP SEGMENT ID
END
END

Fig. 10

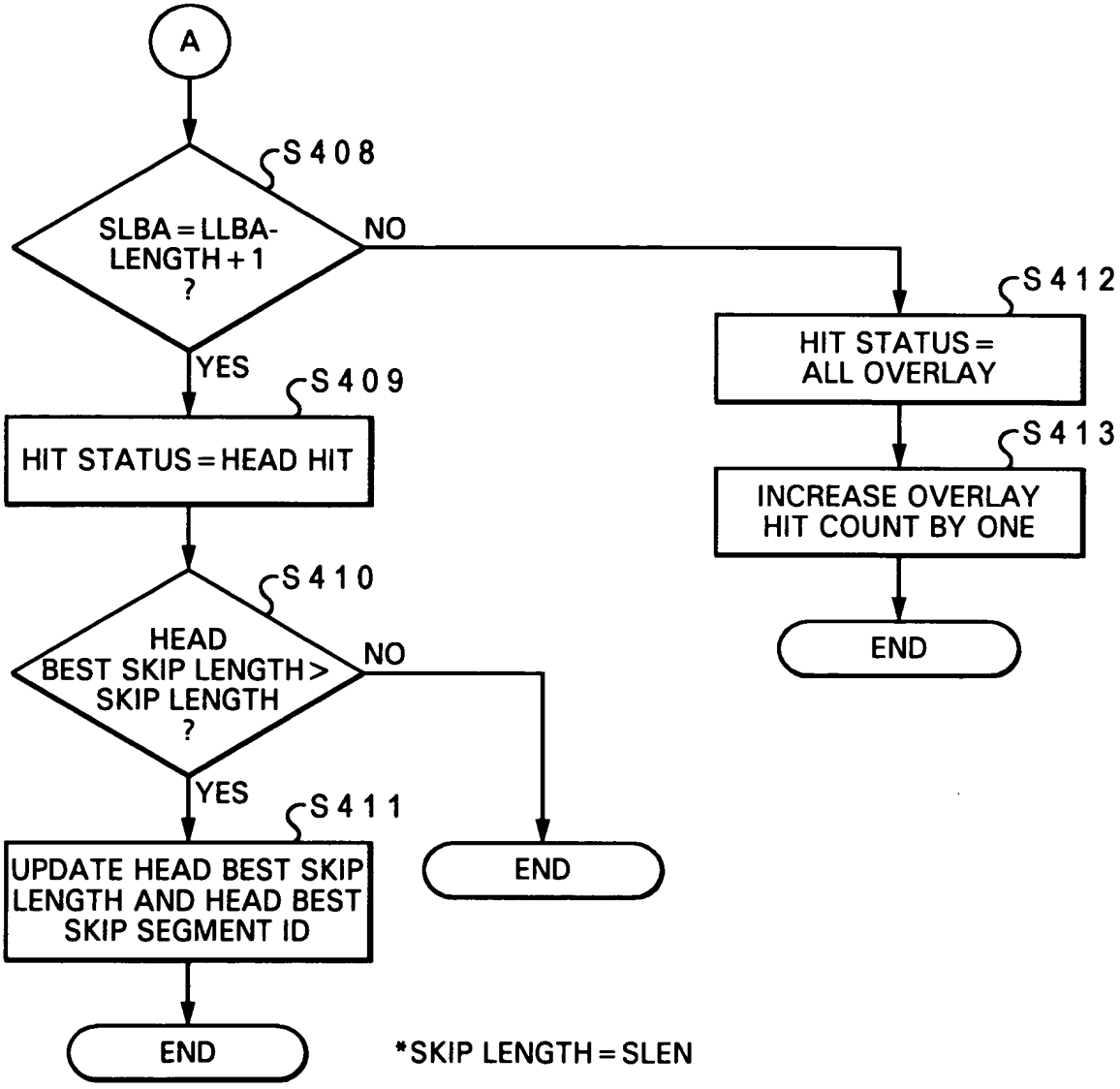
A
S408
SLBA = LLBA-LENGTH + 1 ?
NO
YES
S409
HIT STATUS = HEAD HIT
S410
HEAD BEST SKIP LENGTH > SKIP LENGTH ?
NO
YES
S411
UPDATE HEAD BEST SKIP LENGTH AND HEAD BEST SKIP SEGMENT ID
END
END
S412
HIT STATUS = ALL OVERLAY
S413
INCREASE OVERLAY HIT COUNT BY ONE
END
*SKIP LENGTH = SLEN

Fig. 11

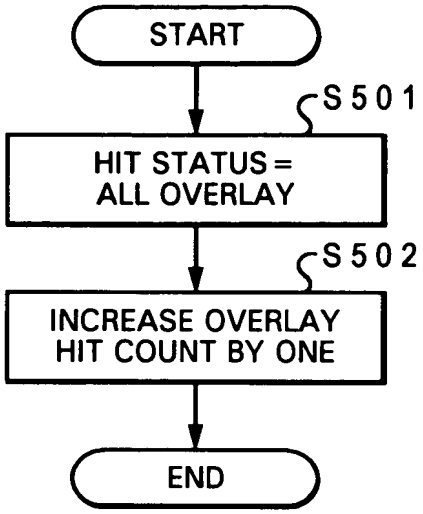
START
S501
HIT STATUS = ALL OVERLAY
S502
INCREASE OVERLAY HIT COUNT BY ONE
END

Fig. 12

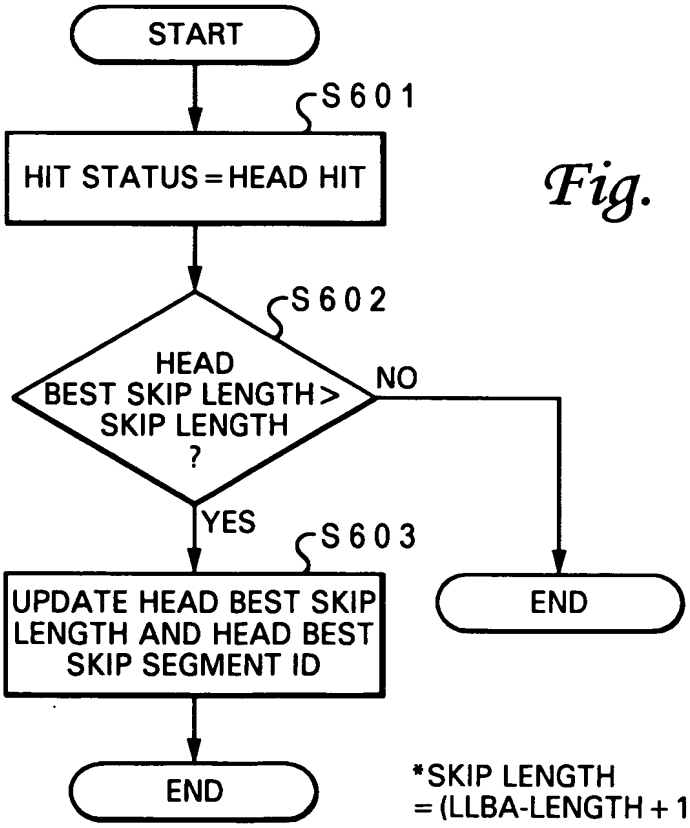
START
S601
HIT STATUS = HEAD HIT
S602
HEAD BEST SKIP LENGTH > SKIP LENGTH ?
NO
YES
S603
UPDATE HEAD BEST SKIP LENGTH AND HEAD BEST SKIP SEGMENT ID
END
END
*SKIP LENGTH = (LLBA-LENGTH + 1)-ELBA

Fig. 13

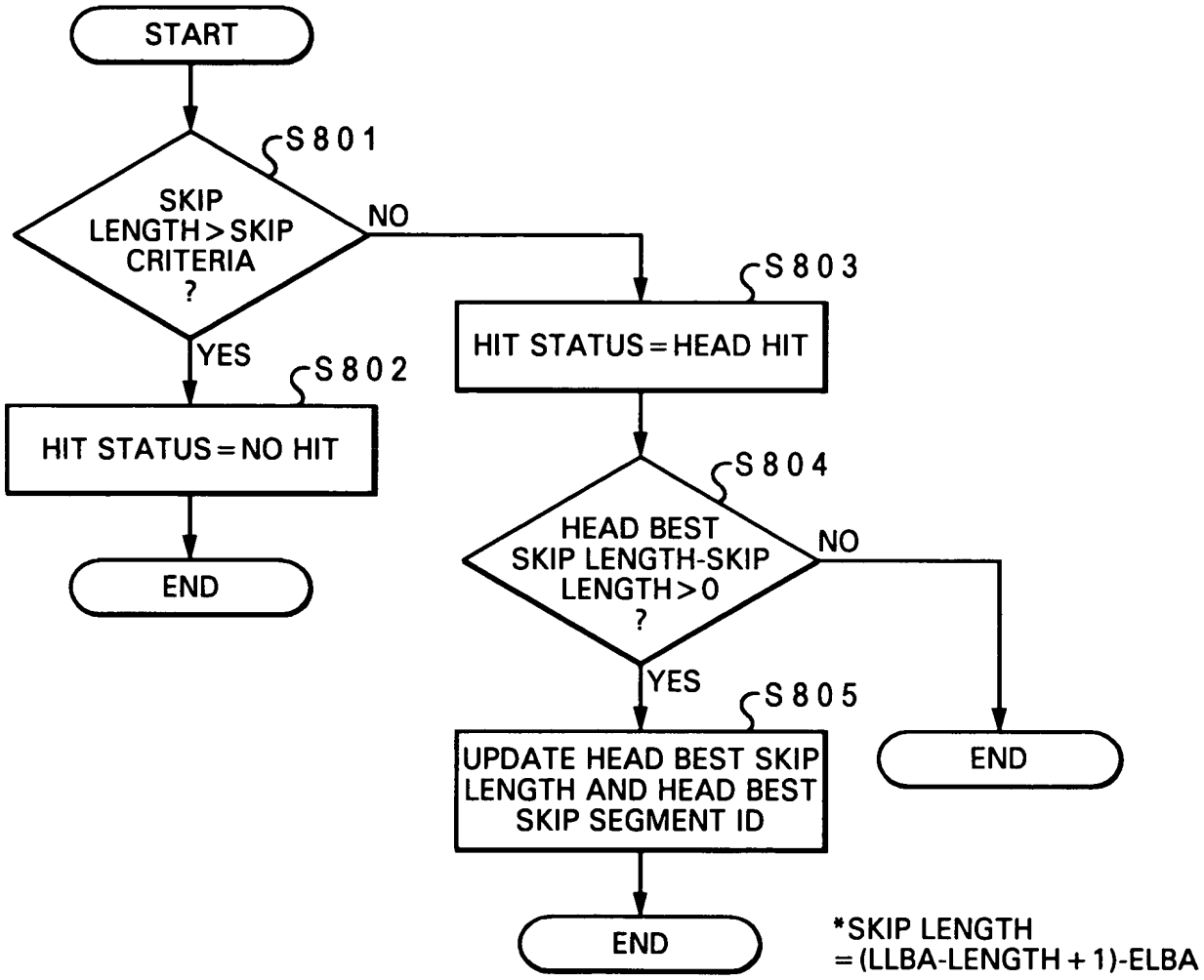
START
S801
SKIP LENGTH > SKIP CRITERIA ?
NO
YES
S802
HIT STATUS = NO HIT
END
S803
HIT STATUS = HEAD HIT
S804
HEAD BEST SKIP LENGTH-SKIP LENGTH > 0 ?
NO
YES
S805
UPDATE HEAD BEST SKIP LENGTH AND HEAD BEST SKIP SEGMENT ID
END
END
*SKIP LENGTH = (LLBA-LENGTH + 1)-ELBA

Fig. 15

H/W USE	H/W USE	H/W USE	NO OF HIT
HEAD BEST SKIP LENGTH	HEAD BEST SKIP SEGMENT ID	TAIL BEST SKIP LENGTH	TAIL BEST SKIP SEGMENT ID

Fig. 16

LAST LBA LOW	LAST LBA HIGH	LENGTH	HIT STATUS

Fig. 17

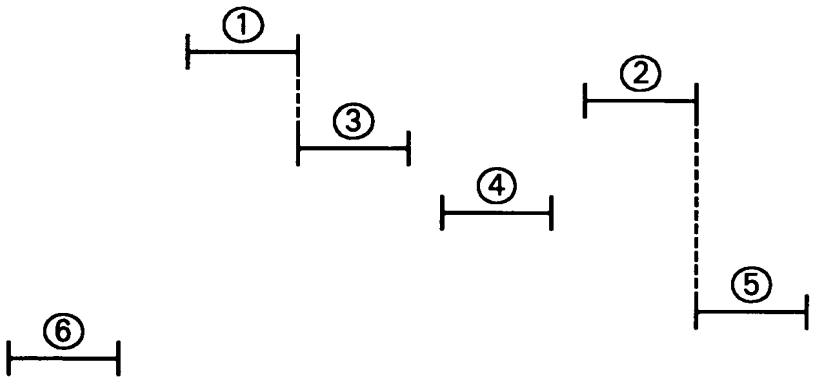

Fig. 18a

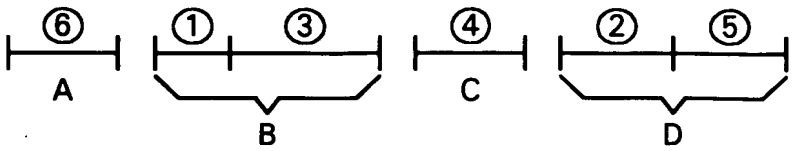

Fig. 18b

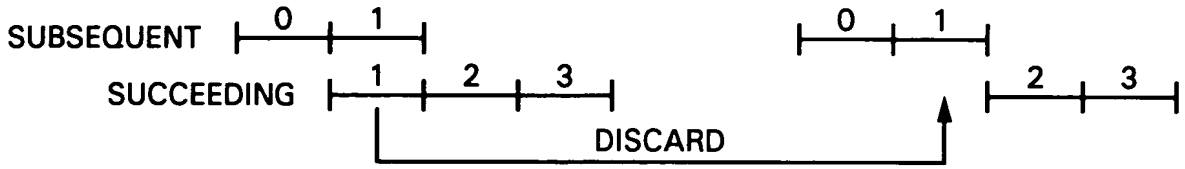

Fig. 19

EDS2/0:46948260

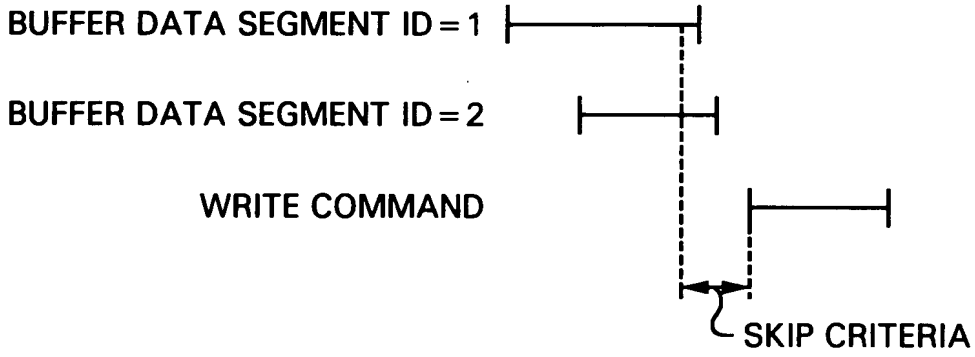

Fig. 20

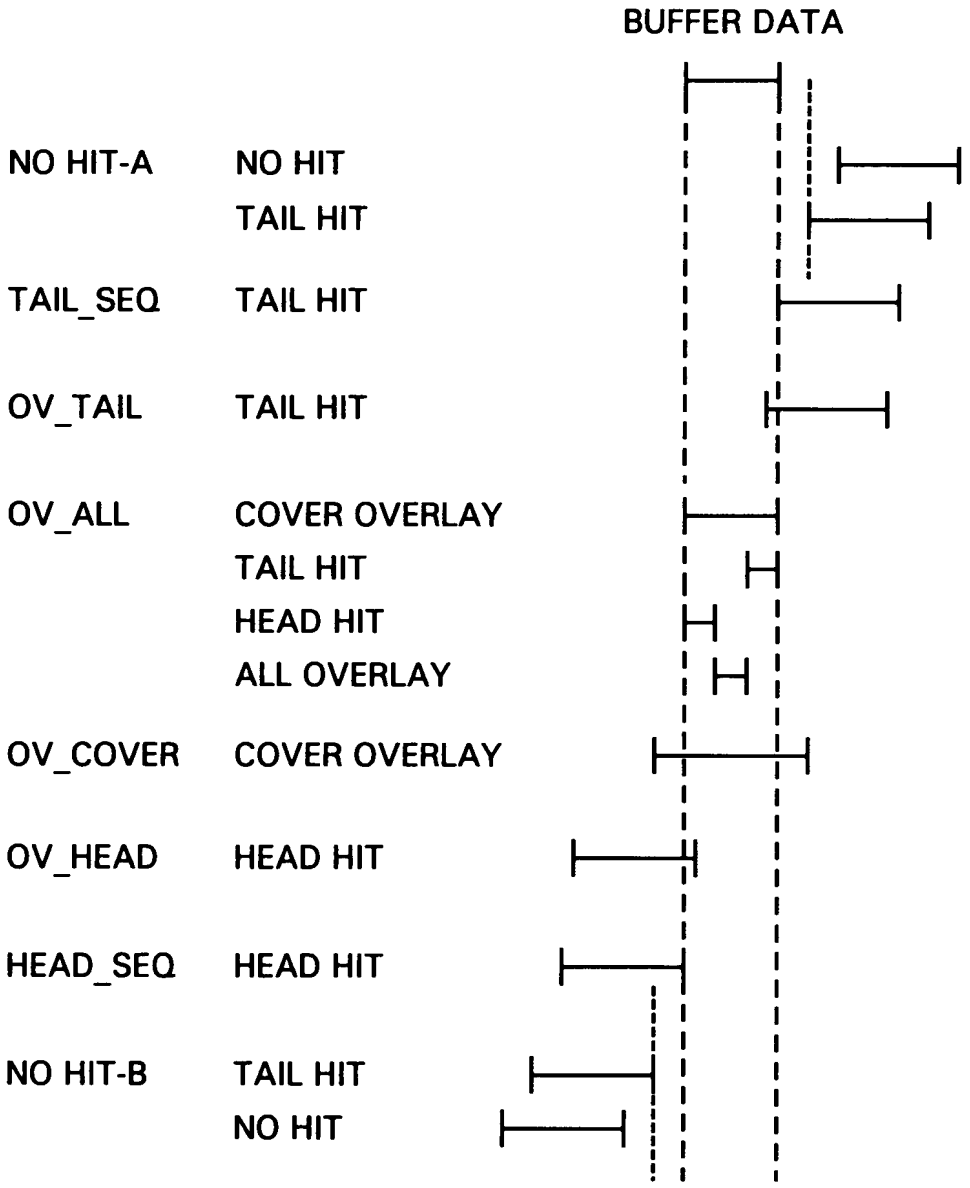
BUFFER DATA
NO HIT-A
NO HIT
TAIL HIT
TAIL_SEQ
TAIL HIT
OV_TAIL
TAIL HIT
OV_ALL
COVER OVERLAY
TAIL HIT
HEAD HIT
ALL OVERLAY
OV_COVER
COVER OVERLAY
OV_HEAD
HEAD HIT
HEAD_SEQ
HEAD HIT
NO HIT-B
TAIL HIT
NO HIT

Fig. 21

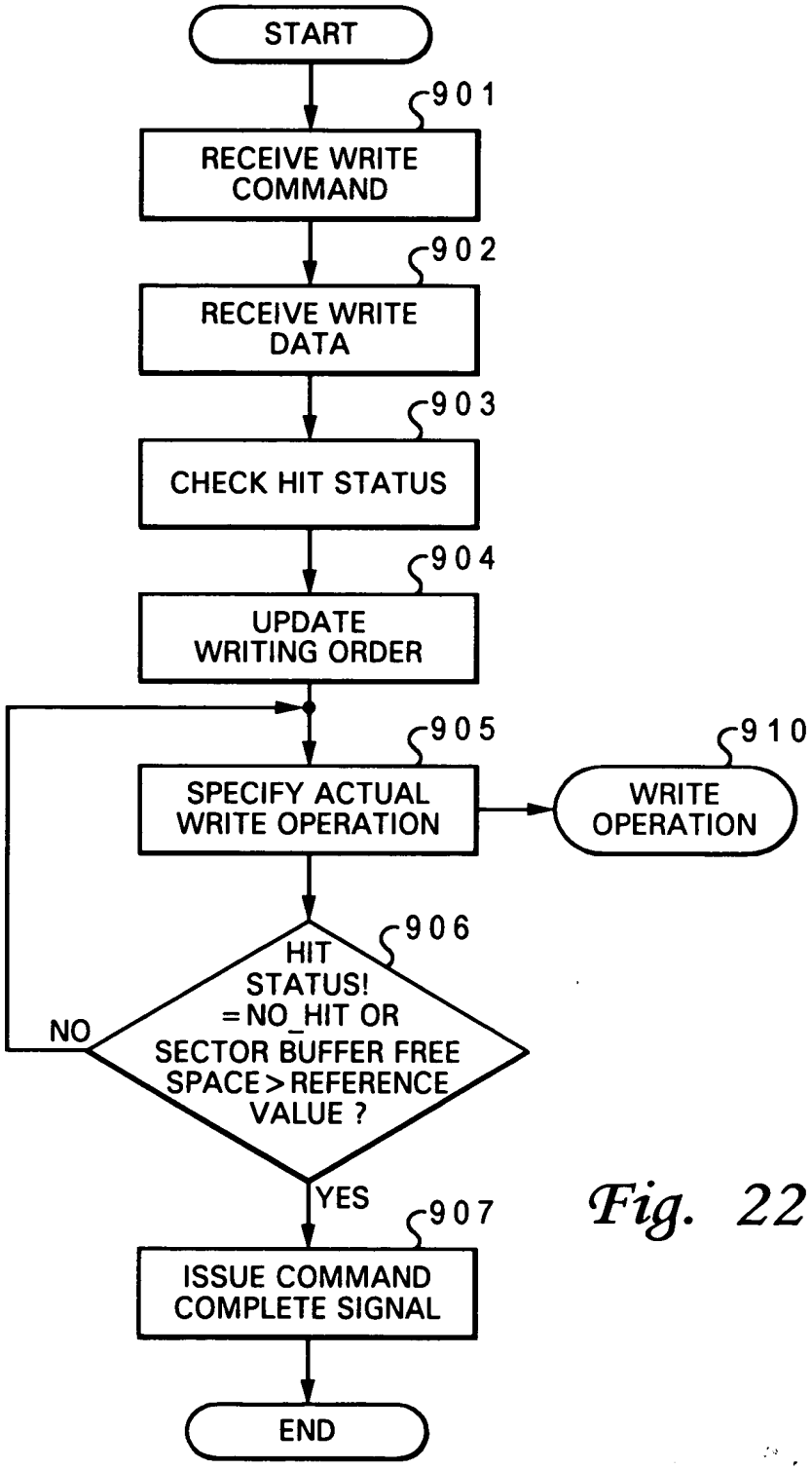

Fig. 22

10/27/2001 05:38:54.0

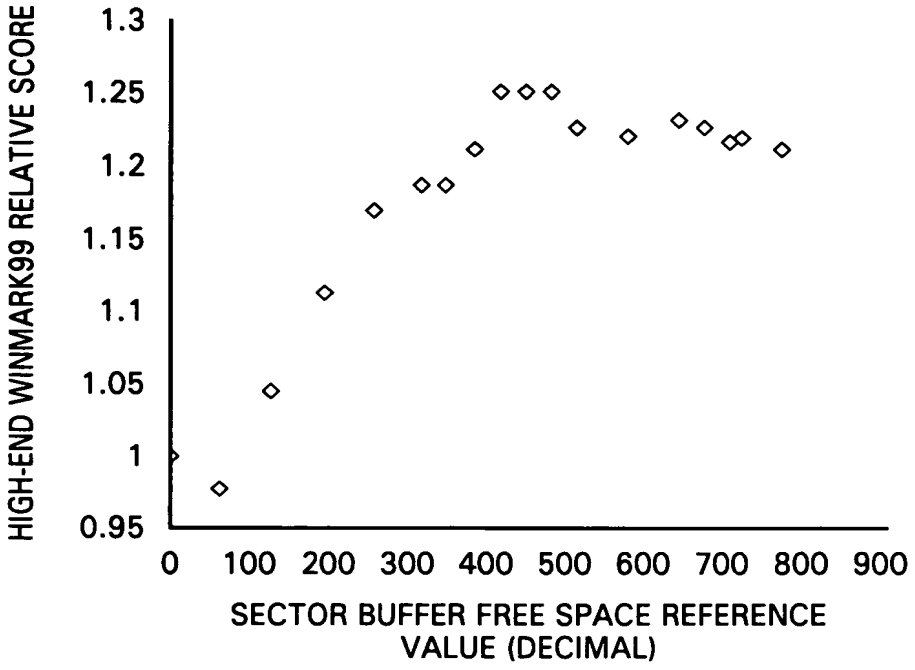
HIGH-END WINMARK99 RELATIVE SCORE
1.3
1.25
1.2
1.15
1.1
1.05
1
0.95
0
100
200
300
400
500
600
700
800
900
SECTOR BUFFER FREE SPACE REFERENCE VALUE (DECIMAL)

Fig. 23

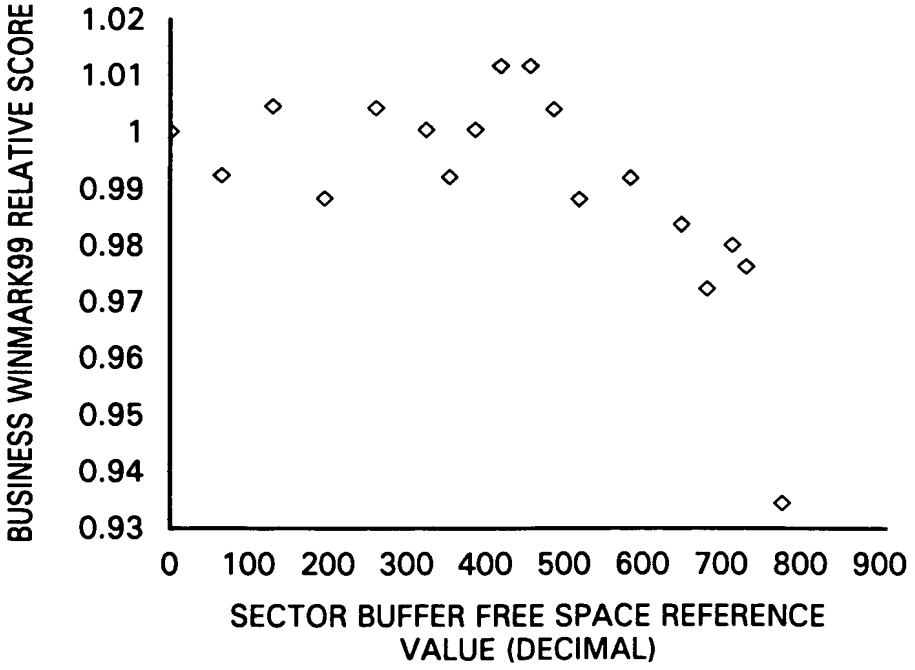
BUSINESS WINMARK99 RELATIVE SCORE
1.02
1.01
1
0.99
0.98
0.97
0.96
0.95
0.94
0.93
0
100
200
300
400
500
600
700
800
900
SECTOR BUFFER FREE SPACE REFERENCE VALUE (DECIMAL)

Fig. 24